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ABSTRACT

This paper represents the findings of a field study designed to examine the management information system of an urban school district to determine the role it plays in (1) bringing about educational change in the classroom, and (2) drawing the district into a closer balance of systems bond with those organizations that receive and depend on the manpower output of the high school. The MIS as a type of "guidance system" for change is made up of three specific information loops and a control mechanism, which acts on the information. It was found that the most respected school district studied had no operative MIS, although a number of the important components were present but were continually breaking down. Through a series of propositions, the author points out the character of the organizational forces that exclude the existence of a functioning MIS and therefore greatly reduce the possibility of systematic change in the high school. (Author)

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ORGANIZATIONAL FEEDBACK AS A FACTOR OF EDUCATIONAL CHANGE

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A Balance of Systems

"The history of other animal species," wrote Bronowski, in his familiar truism, "shows that the most successful in the struggle for survival have been those which were most adaptable to change in their world." To which an appendage was recently added by an old sage who pointed out that our survival may be in doubt because the lower animals always seem to have better information than the rest of us.

Not surprisingly, information is a key ingredient in the substance of the bond that ties together the inputs and outputs of what Blau and Scott (1962:195) call our "web of organizations." An effective "balance of systems" process suggests that organizations which interact with one another reinforce each other by smoothly and efficiently providing and receiving goods and services through the network, in the right proportions of quality and quantity. At least in principle, the man made balance of systems closely models that of Nature. But unfortunately theory is not practice and somehow our balance of systems, lacking the majestic precision of natural systems, gets thrown seriously out of alignment and we find ourselves with famine in times of plenty, inner city decay, economic depression, dirty air and so on. The question of reestablishing our balances between organizations has never been as prominent in our national priorities as it is today, and the relationship of the school to the economic market is no exception. But in

order to establish proper balances between systems, the demands of organizational change come to the forefront.

This study will examine the management information system of an urban school district to determine the role it plays in, firstly, bringing about educational change in the classroom that, secondly, draws the district into a closer balance of systems bond with those organizations which receive and depend upon the manpower output of the high school.

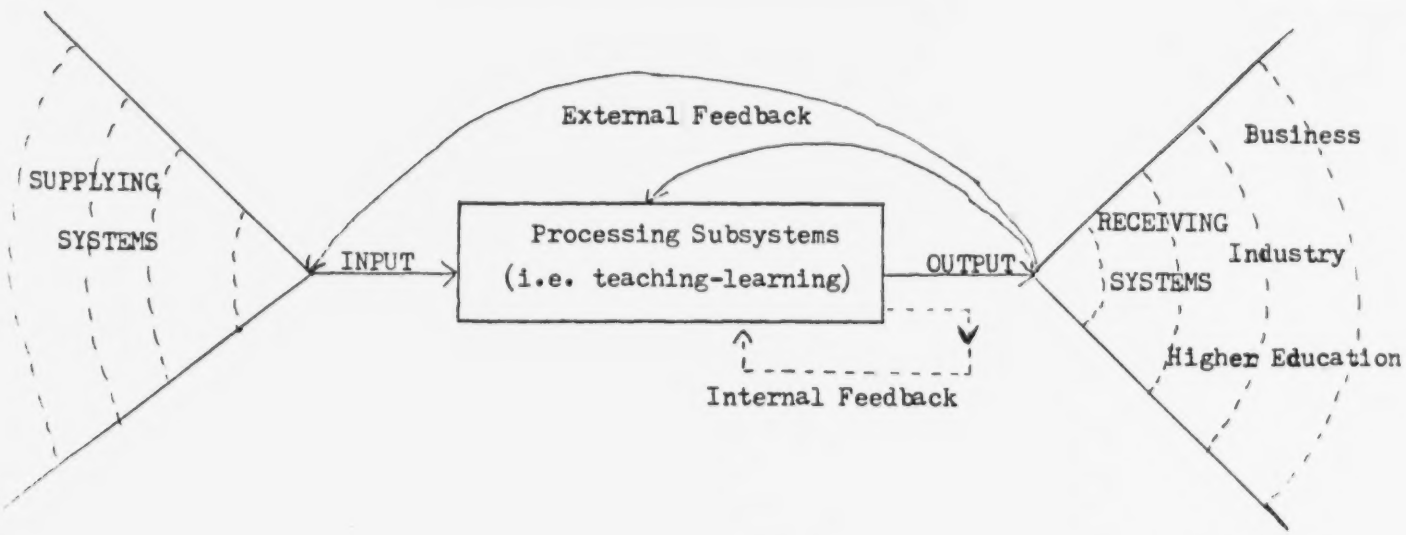
In examining the complex mix of organizational processes and variables that influence the change dynamic of the school, any number of important forces can be, and have been, examined, such as; new laws mandated by the state legislature, new leadership patterns, teacher militancy, student pressure for increased participation in decision-making, increased or decreased material wealth of schools, technological innovation, and so forth. Of all the important change oriented forces which operate on the school, a systematic study of one seems to be curiously missing in the literature --the management information system utilized by the school to plan, organize, and execute a program of educational change directed at the classroom of the high school. Management information system is defined as ". . . a communication process in which information (input) is recorded, stored and retrieved (processed) for decisions (output) on planning, operating, and controlling" (Murdick and Ross, 1971:292).

The MIS Framework

Within the context of a balance of input-output exchanges within a web organization, there is (or should be) a web of organizations which monitors the process to insure it does not slip out of balance. Virtually any organization which has an output that must compete on the market place (e.g., automobiles, radios, high school graduates) is in need of a MIS which facilitates a continuing close relationship between the organization and its market. Figure 1 gives a simplified picture of a Generic Organizational Model containing the basic components central to a MIS.

Figure 1

The Generic Organizational Model



A management information system emphasizes the following characteristics (Murdick and Ross, 1971:135).

1. a predetermined equilibrium to be maintained,

2. a feedback of changes in environment to the system, causing changes in its state,
3. a transfer of information from the external environment to within the system,
4. a device that prompts corrective action when the output of the system oscillates beyond desired limits.

Murdick and Ross might well have added a fifth process to the MIS framework. The additional process is an internal feedback cycle reporting on the need for changes within the organization. The notion of the equilibrium of the school will not be treated in this study due to the expanse of noninformation related variables which would have to be taken into account.

Assumptions

In structuring this research, a number of basic assumptions were made about the character of the educational organization. In the first place, the school is an organization not unlike most other organizations in terms of maintaining system processes of inputs, throughputs, and outputs. True, the school deals with a human product and frequently deals in the affective domain, but in the final analysis an output emerges which becomes an input for another system (just as with the automobile factory or the hardware store). Thus, the Generic Organizational Model (Figure 1) should be representative of the educational system.

A second assumption is that a primary task of the school is to prepare students to enter into, and be successful within, other organizations or systems which receive the high school graduates such as: the home, military, university, or a retail store. On this point, Charles Silberman (1970:115) observes:

> To be educated . . . means to understand something of how to make our intentions effective in the real world--of how to apply knowledge to the life one lives and the society in which one lives it. The aim of education, as Alfred North Whitehead has written, 'is the acquisition of the art of the utilization of knowledge.' Indeed, 'a merely well-informed man is the most useless bore on God's earth.'

A third assumption is that the MIS is not the only system process which gives direction to the decisional center of the educational organization; it is simply one of many. However, like the other directional forces, the MIS has unique properties which normally give it a special role in the process of change. Finally, not all the information that finds its way to the decision-making process is attributed to the MIS. Only that information flow which is relatively patterned and systematic over time is considered to be part of the MIS (thus excluding one-time-only, crisis generated, or special event data.)

Research Questions

The special characteristics of the MIS framework as depicted by Murdick and Ross shape the following questions which form the basis of this study. The first three questions concern themselves with three specific information flows and their seeming influence on the process of change within the classroom. The forth question deals with the operating characteristics of the decision-making process which determines when and where change is necessary in the classroom.

1. How effective is the school district's information process in monitoring the changing needs of those organizations which employ or enroll high school graduates?

In this study the only "receiving organizations" considered are businesses, industries and institutions of higher learning. Question #1 is significant because in order to fulfill its function in the balance of systems process, the school must generate an output of a quality and content which is consistent with the realistic expectations and needs of receiving organizations. Therefore, if the school is to turn out a marketable product, it must be continually informed of the changing demands of the market place. Information flowing into the school district and ultimately affecting the curricular program might take the form of, for example, local and national employment data, short and long range manpower projections, admission expectations and requirements of institutions of higher learning.

2. How effective is the school district's internal information process in monitoring the quality of its teaching-learning (production) process?

These internal performance measures are intended to inform the decision makers if the product is up to the prescribed standards. In most schools this internal feedback process takes the form of a standardized testing program and teacher made tests. The standards are the learning objectives established for the classroom.

3. How effective is the school district's information process in monitoring the post high school experience of its graduates?

Almost all organizations which generate a product for a market go to extremes to obtain this type of external feedback in order to guide the process of change. If, for example, an automobile company is having difficulty selling its automobiles or the product receives bad marks

from the consumer, the producer needs this information so it can review and modify the product. The school needs similar information on the experience of its output once it departs the system. This type of feedback can be obtained through, for example, followup studies, telephone calls and letters exchanged between educators and employers, discussions with graduates (and dropouts) who return to the school for a visit, and on-sight visits by educators to those institutions which have received graduates.

4. How effective is the control mechanism which prompts corrective action when the MIS signals that the output of the high school is falling short of the objectives prescribed by the district?

In terms of the Generic Organizational Model, the control mechanism can be depicted as the recipient of information processed through the MIS. Based on this information the decision-making element of the control mechanism steers the entire complex in a prescribed direction. As Murdick and Ross (1971:300-301) warn, however, the concept of control extends beyond the framework of the MIS. External factors enter in such as "custom, the competitive environment, and government regulations." Nevertheless, the MIS plays a critical role in directing the change process and leading the organization toward a closer relationship with the needs of its environment. If the flows of information were to cease, the organization would have no systematic way of comparing its output to its objectives and would therefore have to grope blindly for direction or depend on instinct, conventional wisdom or tradition.

Setting of the Study

The study took place in the city of Whitney, a prosperous community of approximately 150,000 residents located in the Southwestern part of the United States. The Whitney School District, which consists of 24 elementary schools, 5 junior high schools and 3 high schools, has for many years enjoyed the reputation of being "a good place to send your kids." Like most school districts, Whitney is hard pressed for funds which can go into new and creative endeavors. Almost 90 percent of the operating budget of the district is committed to salaries and fringe benefits of employees. Essentially, this means that change must come within the parameters of the existing educational framework.

Whitney is known as a district which is always looking for a "better idea" and "frequently finds it before anyone else." Some hard data exists to support these notions of willingness to change. As far back as 1965 the school district desegregated its schools through a bussing plan, thus becoming one of the first in the nation to do so. Even though the Whitney School District is made up of a relatively high proportion of minority group students, it has been able to successfully anticipate and defuse potential racial conflicts, while other districts were blowing up all around it. Also, the school district initiated an authentic policy of administrative decentralization a number of years ago in a conscious attempt to push the locus of decision-making closer to the classroom. Using a formula of persistent effort mixed with prudent caution and a finger in the air to test the political and economic winds, the district has indeed won itself a reputation envied throughout the region.

The study surrounding the MIS of Whitney School District involves the central office, one high school (referred to as Kennedy High), and a number of businesses, industries and institutions of higher learning.

A field research methodology was used to conduct this study. Indepth interviews and document analysis were the principle means of gathering data. Interviews were conducted over a period of several months at all hierarchical levels in the district. The research reported here is exploratory in nature as opposed to hypothesis testing. (Scott:1965, 267).

The Management Information System of Whitney School District

Monitoring the Needs of the Market Place

The first component of the MIS concerns the cycle by which information revealing the changing nature of the high school's market place (receiving systems) is gathered by the central office, transmitted to and stored at Kennedy High, and finally distributed to the classroom teachers. The last leg of the information cycle is a request sent from the classroom teacher back to the central office soliciting such things as more specific manpower projections, clarification of data, information on new technologies, and the like; then the information cycle begins again. The importance of this information cycle is that it becomes possible for the teachers and administrators to be continually updated on the changing needs of the institutions that eventually will receive the students after graduation.

At the central office of the Whitney School District there is an individual (referred to as the Vocational Man) who has the responsibility

of gathering information on the vocational market place and distributing it to specific storage points in the high school as well as to department heads. The information he gathers covers such things as short and long range projections on local and national manpower needs, job skill breakdowns, career education trends, current and anticipated state and Federal legislation, and so forth. The information is first placed in a digested form so that, as the Vocational Man says, "specific information goes to specific departments at the school, and then they don't have to wade through material unrelated to their own activities." Information digests are also sent to the principal concerning "the administration of vocational programs and general trends in vocational education." A specific digest is sent from the central office to one of the vocational education departments about once a month and every vocational department receives something about every three months.

Apart from the files of the individuals who directly receive the information, two storage points are intended to be depositories of all vocational information: A Career Center (which also maintains information on university requirements) and the office of the Career Development Center (directed by, of course, the Career Development Man).

The Information Cycle and the Market Place. The following comments reflect on the characteristics of the information cycle as it flows from the central office through Kennedy High and back to the central office.

> (High School Administrator) The Vocational Man sends me material on occupational outlooks, career education technical schools, and legislation. He is very excellent in sending me materials. I gleen the information and route

it to the counselors, and the rest I send to the Career Development Man. When we get the new Career Center organized, it will go there also but right now it is stored in the existing Career Center. This Career Center is poorly organized and poorly located (in a small room behind the nurse's quarters). People do not drop in very often and there is no trained person to help them there. Sometimes a counselor will bring someone back there for something, but I don't know if teachers ever use it.

(The Career Development Man) In my folders up on the wall I have information on laws, career education, objectives, skills for the future, and manpower projections. So far this year I have had one person come in and look at the data and that is because we are going to be evaluated. Last year I had about 3 people come in. So far this information point has been sort of a dead end.

(Department Chairman) I receive information from the Vocational Man and distribute it to the teachers I think can use it. I look to see if it requires action (contains an action notice) and if it doesn't, I do not pay much attention to it. I do not keep a file of this information and neither do the teachers. It is generally disposed of. I don't know of any place in the school where manpower information is stored.

(Department Chairman) I don't recall receiving any manpower information from the Vocational Man. In fact, I don't know if anyone receives information about the job market. I don't have a file on the job market or any skill need projections. I imagine that there might be something like that around (Kennedy), but I don't know where.

(Vocational Teacher) I don't keep a file on career information and I don't know if the department chairman does either. Perhaps the Career Development Man has one, but I've never asked him. To my knowledge, there is no Career Center on this campus, but if there is one I just don't know about it.

(The Vocational Man--Central Office) No, I hardly ever receive a request to gather information for anyone at the high school.

The comments presented here tend to suggest that this vocational information cycle is something less than a cycle. Its tendencies to break down before or after arriving in the hands of teachers indicate that this formally established information process can only have limited impact on the curricular change process in the classroom. None of the department chairmen or the high school administrators indicated during the interviews that this information cycle was particularly influential in deciding what was to be done in the vocational classroom. However, in terms of the Generic Model (Figure 1), this information cycle should play a key role in establishing and maintaining the school in a relatively close knit balance of systems relationship with the organizations that employ or enroll the graduates of the high school.

It should be noted, however, that a few teachers have established their own information cycles with the "outside world." In a few instances these private systems are very sophisticated and make significant contributions to change in the classes of those few teachers who maintain them.

The information cycle established for the academic program is not nearly as complex as the vocational program. The admission requirements to the public institutions of higher learning were fixed over ten years ago and have remained relatively unchanged. College catalogues are stored in the career center and the counselors work hard to insure that students interested in continuing their education are knowledgeable about entrance requirements and performance expectations. The fact that admissions criteria for institutions of higher learning play such an

important role in defining the character of the academic program, coupled with the fact that the admissions criteria have been unchanged for such a long time, suggest a significant pressure at work emphasizing stability in the high school program.

In short, the district's information cycle intended to monitor the changing needs of the market place tends to be a rather inert force for change in the vocational classroom. In the academic classroom the admissions expectations of institutions of higher learning tend not to change over time. This stability of the academic market place tends to create a special set of problems regarding the process of eduational change in the academic classrooms.

"What is the school doing to plan for the academic and vocational skill needs of the future?" the writer asked frequently. "Are you looking at <u>today</u> or at what the market might look like in ten years?" An administrator at Kennedy High responded:

> We are not thinking that way. We are concentrating on today. We are not looking that far in the future because we don't have the resources. In a high school in 1972 it is as much as you can do to hold the place together. We don't have the time to direct our energies toward the type of things you (the writer) are talking about. As far as working toward the future, we haven't done nearly what should be done. We should be preparing students to live in a different world. In some of the classes, however, you can see bits and pieces of this.

<u>Monitoring the Teaching-Learning Process: The Internal Feedback Cycle</u>

In conjunction with studying the changing character of the organization's environment, the MIS model calls for a second information cycle which focuses on the effectiveness of the "production process." In the

case of the school, the production process is the teaching-learning activity. Measures on the teaching-learning process are important because they tell the decision makers of the school how well they are doing whatever they are doing. These measures, however, do not necessarily tell the teachers whether or not they are moving in the right direction with respect to what is being taught. Other types of criteria must be applied to get a grip on this latter issue.

In terms of bringing about change in the classroom (especially in a decentralized system), an appropriate internal feedback cycle would be composed of the following stages: (a) The decision makers at the high school determine the special characteristics of a testing program which would provide data on how specific parts of the educational program could be developed and improved. These tests necessarily have to be standardized to insure questions of reliability and validity as well as to provide for comparisons across time. (b) After the tests are given, they are sent out to be scored, coded in some form meaningful to the teachers, and finally returned to the high school. (c) On arrival at the high school, the data are distributed as well as stored. (d) The data are then analyzed and specific decisions are made regarding how the training program can be modified to bring about improvement. (e) After a period of time, the testing cycle begins once again with the expectation that the changes to the program will have brought about increased learning.

Beginning the Cycle. When the teachers and administrators were asked how they judge whether Whitney School District has a good or a bad academic program, the first response of most of the educators was

to point to the statewide standardized testing program (which is conducted at the 12th grade). The line of thought which developed around the standardized testing program is well articulated by a school board member:

> I know that our achievement scores at the high school have been going up year by year. This I know for a fact. This leads me to believe that across the district the educational program is better than ever before. The average IQ has been going down year by year and the socioeconomic status decreasing year by year and the transciency increasing year by year. Also the proportion of minority group families increasing year by year. I put all these things together and increasing achievement scores leads me to believe we are doing a better job than we were doing a few years ago.

As an information device, the statewide testing program is intended to produce just this type of analysis; and the initiator and intended benefactor of the data is the State Department of Education, which is interested in an end-of-training measure. Almost everyone interviewed agreed that this type of testing program gives the State, the board of education, and the community some idea of how the students are doing at the time they finish their public school education.

But herein enters the problem in terms of the information cycle. The cycle begins and ends with the State Department of Education, with the board of education standing in at times as the surrogate benefactor. The information loop flows from the State Department (where the tests are mandated), to the central office at Whitney, to Kennedy High (where the data are gathered) back to the central office, to the board, and finally to the State Department. A secondary loop swings back to Kennedy High from the central office. "As it is defined by the State Department of Education," a central office official observed, "it is not a basic purpose

of the program to enable individual teachers to change their programs. If that can be done it is all right, but that is not the intention." An appropriate question then becomes, is change in the classroom a possible derivative of the statewide testing program? To say the least, a cloud of confusion surrounds this issue at Whitney.

The arguments on the subject tend to gravitate to one of three basic positions. The first is similar to that of the superintendent who argues that "the data should be of rather specific use to teachers and department chairmen in indicating to them directions where they need to make further investigation." Change, therefore, should be derived from specific decisions made as a result of this investigation process.

The second position suggests that the data are of significant value to the teacher when some technical manipulations are made to it. A school board member stresses this view. "For the individual teacher the item analysis of the data will tell her what the kids are doing well on and what they are not doing well on, and as such provide the teacher with excellent information on the strengths of her instructional program and consequently where she would need to change. Those tests are not good for any kind of instructional revision unless an item analysis is done." The third position was often stated rather bluntly. A department chairman commented, "There is absolutely no correlation between the testing program and the needs of our teachers and our curriculum."

Obviously, the wide ranging debate on the utility of the standardized tests can't help but in itself detract from the application of the information for purposes of change in the classroom. Granting this,

the next step is to trace the secondary information loop as it carries the scored test data back to Kennedy High and finally makes its way to the classroom teacher.

Test Information at Kennedy High. On receipt of the data at Kennedy, the scores are systematically stored on the cumulative records of the students and interpreted for them in class. Counselors use it for student advising and at times a teacher will use it to identify learning difficulties specific students are having. But the central question concerns its application for curricular change.

The high school test scores are not item analyzed at the central office, therefore the data are only gross indicators of general performance. A central office administrator observed that an item analysis was once performed on the high school scores, but no one really seemed interested and the process was so time consuming that the practice was stopped.

The teachers and administrators at Kennedy tend to view the testing scores from the following positions: suspicion, "In the past we have made many judgments about minority kids based on tests and now we are finding out what we have been doing to them"; boredom, "The test that was given last week, I don't even know what it was for"; time crush, "I don't have half the time to do half the things that really need to be done"; monotony, "We give these tests year after year and nothing seems to change"; necessity, "We need these tests to help identify underachieving students"; and detachment, "These tests are really intended to keep the board of education happy." For these and other reasons, meetings are rarely held at Kennedy to study, analyze, and plan for

change in the curricular programs of the classroom. As a social system, there are too many forces at work which would make this process any more than a perfunctory activity.

The climate at Kennedy for the utilization of the standardized testing data is certainly not ideal. A number of reasons have been suggested as to why this is the case. But another reason which continually came up in the interviews was the notion of using every bit of energy in keeping the school from blowing apart--keeping it moving from hour to hour, day to day, month to month. A department chairman at Kennedy put it this way. "I think that it is a function of this school to interpret new information and develop programs of change. I am sure if we initiated the interest, the central office would be happy to help us. But we haven't done it. That hasn't been one of our priorities. We are trying to survive here, to keep the school going."

Completing the Cycle. The final step in the information cycle as it is now constituted would be requests made to the central office for special assistance in utilizing existing testing data or for the creation of special testing programs. "This happens about once a year," a central office official replied. A teacher at Kennedy gave a rather typical response as to why the information cycle tends not to make this final step. "I've never asked the central office to help me out with an (objective testing program) for my students. If I wanted to invest a lot of my personal time, I could get the job done, but that would get in the way of a lot of higher priorities."

In sum, the data from the standardized testing program do not usually find their way through a complete information cycle. The blockages are formidable. But in any case, the data which educators throughout Whitney School District point to and say, "we have a good school program," apparently have very little to do with the process of curricular change in the high school classroom.

Teacher Made Tests. The teacher made test represents another systematic, patterned information flow which ought to be considered in terms of bringing about change in the classroom. As a component of an information system, the teacher made test would have to be an accurate measure of the degree of student learning. The educators interviewed were virtually unanimous in asserting that the teacher made test is not a very accurate measure of learning. Commented one of the central office administrators:

> If you went out to one of the departments and asked how much their students had learned, they probably could not tell you. I believe that a teacher at the high school can tell you what he thinks the students have learned, but I'm not sure how accurate that perception would be. He would use very subjective criteria, probably material he covers in the textbook, and what he has added from his own background. I don't think that really measures what the student knows. This type of measurement is so difficult. After all, what is a unit of learning? How can we say that what the student learns is the result of what happened in the classroom? We can't isolate the students to control out the community, the radio and other information.

The information derived from teacher made tests seems to play a role in such things as changing a text from time to time or increasing or decreasing the perceived level of difficulty a notch or two, but precise, systematic and substantive change doesn't seem to enter into the equation.

Monitoring the Product: The External Feedback Cycle

Along with the information cycles that are monitoring the changing environment of the organization and the production process, there is another information cycle which ought to make a valuable contribution to the process of change. This third cycle is generally tuned to determining how well the product does on the market place and reporting back information which tells the decision-makers where the improvements should come. In terms of the school, the following information is pertinent: (a) data on the ease in which students are placed in positions which are consistent with their training and interests, (b) systematic follow up studies as well as personal reports on how the graduate views his post high school experience in relation to his training, (c) information from employers and colleges on the performance of the graduates.

Placement. Whitney School District assumes no formal responsibility for the placement of its graduates. Except for writing letters of recommendation for those students who request them, the burden of finding a job falls almost fully on the shoulders of the graduate. Some teachers, however, make a personal attempt to place some of their students. "Placement is not part of our responsibility," replied a vocational education teacher, "but if I know of any job openings I will do all I can to help them out. No one on campus has any responsibility to place them."

Placement in an institution of higher learning is another matter. By state law, virtually any high school graduate can enter a community college regardless of his academic credentials, therefore that avenue

is open for almost all who wish to continue their education.

Because the district makes little attempt to place its high school graduates, there is very limited information flow to the school which suggests, for example, how successful the graduates are in making the transition, the kinds of problems they typically run into, and the type of training which might have helped them make an easier transition. This type of information can come from attempts to place graduates or from later follow up studies. Whitney has chosen to use the follow up approach.

Following Up the Graduates. The theory behind the follow up study suggests that information feedback based on the post high school experiences of graduates can assist the educators in planning and operationalizing more effective educational efforts. If knowledge of what goes right or what goes wrong with the product (after it arrives on the market) does not reach the educator, then it becomes quite possible that the educator will continue the same practices year after year without feeling a need to change.

It is also possible for the product to show up very poorly on the market place but at the same time to have performed very well on internal measures (e.g., standardized tests, teacher made tests). In the same token, it is quite possible that the product will perform very well on the market place but to have performed poorly on the internal measures. The Generic Organizational Model is very clear in suggesting that both the internal and the external feedback is necessary for a precise process of change.

It is worthwhile noting that when the educators at Whitney were questioned about how they determined if the district had a "good" or a "bad" academic program, virtually all of them pointed directly to the standardized testing. Only after the writer asked about the follow up studies did the respondents suggest that the post high school experience should be important in such a critique of the educational program.

Generally speaking, the information cycle of the follow up study comes in the following stages: (a) a questionnaire is developed by the central office or the high school covering the post high school experience of those who were in the vocational as well as the academic programs; (b) the instrument is sent to the graduates after sufficient time has passed for them to have fallen into an employment or higher education pattern--all of the sophisticated techniques apply for ensuring an adequate rate of return; (c) the information is returned to the district where it is processed, coded, distributed and stored; (d) the information arrives in the hands of teachers where it is used as data to improve the curricular program.

Just as the State Department of Education initiates the information cycle of the standardized testing program, the State Department initiates the cycle for the follow up of the vocational education program. Only those students who attended a program funded under the Vocational Education Act are surveyed yearly. At Kennedy High, this means that about 27 percent of the graduating class (1972) are followed on a yearly, one-time-only basis. In the minds of most educators interviewed, the data are not at all appropriate for judgment about the need for curricular change. A State Department official dissatisfied with the study

explains why.

> The timing is lousey. To meet the intent of the Vocational Act the district is required to report data by November (four months after graduation). This does not truly reflect either post secondary enrollment patterns or their labor market experience.

A central office administrator gave his impressions of the survey. "The purpose of this survey is to answer questions for the State Department. We receive a poor return ratio (50% in 1972). Nothing goes out to students in the academic programs. In fact, if the State Department didn't require this follow up, we probably wouldn't do it because of the expense."

No yearly follow up is done on those students who pursue an academic as opposed to vocational program. Nevertheless, at Kennedy High an attempt is made to get an account of the number of students enrolling in higher education. "By the transcript requests received we estimate how many went to college," a school administrator commented. "We think it is very accurate, but to be honest with you, we don't really know." The school does not try to maintain any running statistics on trends in college attendance or vocational employment because sufficient data for this do not exist. Thus, there is no way to compare the progress of the present with that of the past.

Even though the yearly follow up studies leave almost all of the significant questions unanswered, a major government funded follow up study (academic and vocational programs) was conducted with the 1962 and 1966 classes which answered almost all of the significant questions. To say the least, the 1966 study was a classic in sophistication, pre-

cision and practicality. The methodology and findings received national attention and the strategy has served as a model for a number of similar studies in other regions of the United States. A basic decision was made at Whitney in 1966 to repeat the study with every fourth graduating class. The difference would be, however, that Whitney School District would have to use its own funds in the ensuing replications.

When the 1970 follow up was supposed to have been conducted, the priority was so low that sufficient funds were not available to do a thorough survey, for example, funds were not available for everyone to receive a return stamped envelope, no phone calls could be made to non-respondents, and a second wave of questionnaires could not be sent out. A 19 percent return resulted (as opposed to over 50 percent in 1966) and the data were not processed because of the obvious inadequacy. What promised to be a valuable external feedback source across time was, in effect, strangled by a lack of priority.

The only systematic reporting of follow up information, therefore, comes from the yearly vocational education survey. This rather limited information flow is distributed to the teachers after it is first processed and coded at the central office.

On the vocational side, when teachers and administrators were asked if they could say whether 20 percent or 80 percent of their graduates were able to obtain work after graduation, the typical response was, "I have no idea." On the academic side, the teachers who came up with a higher education enrollment figure at all placed it in a range from 40 to 80 percent. The superintendent stated a figure of 80 percent

although he was careful to note, "I have not actually seen any information since the original study was conducted (in 1966) on the number that go to college, but people who should know tell me it is reasonably correct."

In brief, since 1966 the external feedback information cycle monitoring the post high school experience has tended to be less than adequate for bringing about a sense of need, or a sense of direction, for curricular change in the classroom. In searching out a reason for the low priority the follow up study has received, a number of patterns emerged in the interviews. These patterns can be typified as follows: mobility, "It's very hard to locate the students once they leave the area;" socialization, "Two years after high school the graduates are different people altogether;" detachment, "It's not imperative to know these things to have a good school system;" finance, "It costs a lot of money;" commitment, "I'm not sure the district really wants such data because it might indicate a lot of difficult changes are necessary."

When administrators at the central office were asked to estimate the amount of manpower, money, and time utilized to understand and influence the character of the input into the district (e.g., bond elections, demographic studies, personnel interviews) versus the amount of manpower, money, and time utilized to understand and influence the character of the output of the school (e.g., placement, follow up studies), the typical response was many thousands to one. Few people disagreed that if a small part of priority attached to observing the inputs of the system were attached to observing the outputs of the system, a viable external feedback cycle could be established.

Direct Communication with the Market. Also representing a potential flow of information which could have a bearing on the curricular program would be exchanges of correspondence, telephone calls, and personal visits with members of receiving organizations. On this subject a Kennedy administrator reported, "Occasionally we receive a phone call from the outside telling us how a student is performing, but not very often. I suppose we could go out and solicit this, but we haven't. The most contact we have with industry is writing recommendations for some of our students."

The local junior college and a nearby state college send annual reports to Kennedy High regarding the first year performance of Kennedy graduates. This information flow, however, only covers a minority of the college bound students. Strangely enough, the state university sends only a grade point average for each student therefore it is of little use to the individual teacher at Kennedy who might wish to see how his former students are performing in his own subject field. The junior college sends the complete first year report card, but Kennedy teachers indicate that they rarely see or ask to see this information.

Returning Graduates. Many of the educators at Kennedy suggest that their graduates who return for a visit represent a significant source of information on the post high school experience. "We discuss with them how realistic their training was," a department chairman commented, "and how well their high school experience prepared them. Actually, the ones we see are the ones that liked school and did well. We don't see many of the failures come back." This type of information is here

defined as affirmative feedback because the educators are receiving positive cues on the character of the training program.

The students who experience little or no success tend not to return to Kennedy. This type of negative feedback is also screened out by the administration. "We see a lot of people who drop out," the administrator said. "We run them away. They come back to hang around and see a girl or boy friend, not to see us."

In brief, the information flow which seems to be very important to the teachers in weighing their instructional program seems to be heavily balanced in favor of affirmative feedback which reinforces the existing teaching-learning process. The negative feedback tends to reach the teachers in very limited doses.

The Control Mechanism

"Indeed communication networks and the information transmitted through them" Mouzelis (1967:130) emphasizes, "are the basis of organisational decision-making and control." The control mechanism is the recipient of the three systematic information loops already defined: information on the changing nature of the market place, information comparing internal measures of performance against predetermined objectives, and information on what happens to the output once it arrives on the market as compared with predetermined objectives.

Educators distinguish between the idea of a goal and that of an objective. A goal represents a general direction of learning, for example, "to provide all students the opportunity to develop skills enabling them to gain employment." An objective, on the other hand,

represents a desired accomplishment that can be measured within a given time frame. For example, "90 percent of graduating seniors who wish to enter the labor force will gain employment within 6 months as measured by a follow up study." Andrew and Moir (1970:8) point out that an objective must be explicit enough to enable one to measure whether the objective is being realized and be realistic enough that it can be achieved through something less than divine intervention. Also, they should be directly related to higher and lower levels of objectives.

Educational Objectives. There is little debate about the traditional role that goals and objectives have played not only at Whitney, but in the educational institution as a whole. On this issue a school board member commented:

> Historically, the goals and objectives were considered as an activity we must engage in and put on paper. Once on paper they can be nicely bound and we can say this is what we are doing in the district. They are then put in the bottom drawer and forgotten. This has been the history of public education. Hopefully, it is now being changed.

The superintendent is also aware of this tradition and sees change coming, but for the moment there are only goals and no objectives at the high school. "We are not really operating under quantitative objectives. Not in the sense that we have specific enough objectives to measure and then react in terms of those measurements. I think only now we are getting to that, and we have had only real success at the elementary school level."

An example of a rather typical goal statement to be found at Kennedy is, to develop "awareness of the values inherent in our democratic society and loyalty to its underlying principles." Because there are

only goals and virtually no objectives, and because the goal by definition is very general, the teacher can do almost anything in the classroom his professional standards permit and still fall within the confines of the goal. For this and other reasons, the significance of a statement of goals seems to have little meaning at Kennedy. The individual teacher senses himself to be the expert in a specific subject and on his expertise the curricular area is given direction. A question and answer session with an administrator at Kennedy seems to represent a dominant pattern of thought.

Q. Has the school developed goals and objectives?
A. We are going to be accredited this year and have developed goals by department, but they are only loosely coordinated with district goals at this point.

Q. Could the school operate without a set of goals?
A. Oh, we have for years.

Q. Do the teachers attach much importance to the goals?
A. No. There are many teachers, especially in the academic areas, who believe that the type of things they teach cannot be measured. They have their own private set of goals. A lot of teachers believe that goals, objectives, and the like, are things that administrators and legislators design to give them busy work to do. They feel they know what they are going and what they are doing is good.

Q. How do they know what they are doing is good?
A. I don't know.

Information Cycles and the Control Mechanism. Earlier discussions pointed out that the three critical information cycles tended to break down before or after arriving at the classroom level. Also, the control mechanism intended to receive the information is not made up of measureable objectives which can signal when and where change is necessary. In

terms of the conceptual framework, Whitney School District (Kennedy High and the central office) does not have an operative management information system. The implications of this finding are significant for the process of change and the balance of systems notion because it suggests that the school does not have a "guidance system" to lead it toward an improved balance of systems position.

It should be pointed out that numerous forces beyond the lack of information can be major contributors to slow process of change, for example, lack of material resources, constraining state legislation, and rigid university entrance requirements. But even if these constraints were wiped out, a smoothly functioning MIS would be necessary to initiate a program of change at the classroom level which could eventually bring the high school into a balance of systems bond with its environment.

It might be added that the problems associated with the MIS and the process of systematic change probably go far beyond Kennedy High. It is the writer's view that these same difficulties could probably be found rooted to the core of most educational systems in the United States. This, of course, is a hypothesis which remains to be tested.

An appropriate conclusion to this study would be to define some propositions which relate to the question of why the MIS tends to be a relatively inoperative process in the educational organization.

Propositions on the MIS and Change in the Classroom

The intent of this study is to "explore organizational forces at work which inhibit a more effective relationship between the school and

the needs of society." It is therefore not enough to simply suggest that the MIS is not an operative force for bringing about change in the classroom. The question of why this is the case ought to be dealt with.

In responding to the question of "why", a few assumptions must be made. (a) The responses are speculative and can best be stated in the form of propositions to be tested across a broad spectrum of schools. (b) The responses are found in the characteristics of the educational organization and not in the personalities of individuals, (c) The school district is a system made up of a number of subsystems which do not always act in concert with respect to the process of change in the classroom. (d) The propositions developed here are by no means intended to represent an exhaustive list, but are only those which are suggested by the data of this study.

1. Major Proposition. The receipt of the resource inputs in the school district are only marginally dependent on the success of the output of the school, therefore the district can afford to pay limited attention to what happens to its output. (Output means the post high school experience of graduates and not test scores.)

   Minor Proposition. Because the resource inputs of the school are not dependent on the output of the school, the district does not have a special need (e.g. survival) to gather precise follow up information.

Discussion. Richard Carlson (1965:6) has provided a classic analysis as to why the school tends not to be output oriented as are most types of organizations. Carlson refers to the school as a domesticated organization. "They are not compelled to attend to all of the ordinary and usual needs of an organization. For example, they do not compete

with other organizations for clients; in fact, a steady flow of clients is assured. There is no struggle for survival for this type of organization--existence is guaranteed. Though this type of organization does compete in a restricted area for funds, funds are not closely tied to quality of performance. These organizations are domesticated in the sense that they are protected by the society they serve."

As a domesticated organization, the school loses qualities present in the Generic Organization. For example, because the continued existence of the school is guaranteed by society, the school is not required, for reasons of its own survival, to push for an ever closer balance of systems relationship with its markets. Thus, the need for a functioning MIS is greatly reduced.

2. Major Proposition. The educators and the community think of the output of the school as the amount of learning that takes place up until the time of graduation rather than the success of the graduate at achieving satisfactory employment or successful college experience.

    Minor Proposition. The community and the State attempt to hold the school district accountable for the during school experience of students rather than the post school experience of graduates.

    Minor Proposition. The school district places a high priority on gathering information which meets demands for during school accountability, and a low priority on post school information which is not necessary for accountability.

3. Major Proposition. An organization with an incentive system which rewards its personnel for their own results will place a high priority on gathering information that will measure and improve those results.

--Conversely--

Major Proposition. An organization which primarily rewards conformity to officially established procedure will place a low priority on gathering information intended to measure and improve the results of the individual members.

Minor Proposition. Because the educational process is cumulative from the first through the twelfth grades, it is difficult to measure and determine precisely the individual contributions of individual teachers.

Minor Proposition. Because it is considered difficult to measure the individual contributions of individual teachers, the teachers are rewarded for conformity to officially established procedure (i.e. classroom control, record keeping).

Minor Proposition. Because the teachers are rewarded for conformity to officially established procedures rather than their own results, the teachers feel under limited compulsion to seek out information which will help them understand their own contribution to the learning process.

Discussion. Blau and Scott (1962:166) observe that ". . . some writers have distinguished between incentive systems that reward results and those that reward conformity with officially established procedures." They cite James Worthy (in Blau and Scott, 1962:166) who states that incentive systems rewarding results, "develops initiative and self-reliance and generates a far more powerful driving force than could ever be imposed from the top down." Because the information gathering and utilization process is not tied into the reward structure of the teachers, there is little incentive for them to seek out better ways of performing classroom tasks.

4. Major Proposition. An organization that sees itself in a condition of continuing crisis searches for stability rather than change.

Minor Proposition. A school seeking stability will place a low priority on information intended to bring about change.

5. Major Proposition. The organizational role of a teacher is structured to maximize conditions essential to stability and minimize conditions of anxiety which can lead toward change.

> Minor Proposition. To be effective, the MIS information cannot be pushed through the system from the top out of a sense of need for classroom change felt by the administration, but must be pulled through the system out of a sense of need for classroom change felt by the teachers.
>
> Minor Proposition. Because all teachers have met professional requirements for certification they consider themselves to be very good teachers, therefore, they tend to place a low priority on information which examines their instructional programs.

Discussion. A number of characteristics are structured into the teacher role which can screen out change oriented information. Some of the screening devices are, for example, the tradition of classroom autonomy for the teacher, the low visibility of the teacher at work in the classroom, promotion by seniority rather than merit, a social norm among educators with respect to never directly critiquing the performance of other teachers, and tenure. There is no suggestion here that these organizational features are necessarily bad, only that they have the consequence of screening out change oriented information.

A Closing Note

The opening paragraphs of this paper suggest that the educational institution is having difficulty maintaining a close, balance of systems relationship with the needs of other sectors of our society. The course of this study examined the workings of the management information system which is supposed to act as a guidance system toward bringing about

planned change in most types of organizations. Probably, what was observed at the Whitney School District could be found in school districts throughout the nation due to the fact that the organizational model for public schools tends to be very similar. The organizational characteristics of this common model are probably responsbile for the nonoperative character of the MIS.

In a number of ways the national scope of the problem has been recognized and strategies have been proposed to modify the organizational characteristics of the school so it can be systematically more susceptible to change. These plans include, for example; the voucher system, for turning the school into a competitive organization with no guaranteed resource inputs; planning, programming, budgeting system, (PPBS) providing for measures of performance against specified objectives; and performance contracting, the creation of an incentive system rewarding results instead of conformance to established procedure.

These relatively new and unproven notions, and others like them, represent rational strategies for bringing about planned change. These strategies are dependent on people reacting to them in a similarly rational way, and for this reason many sage observers believe that rational change is only a state of mind. Stephen Vincent Benet has provided a rather interesting illustration of the trials of taking a rational plan off the drawing board and sending it into the field. He contrasts the military blueprint with military action (in Blau and Scott, 1962:5).

If you take a flat map
And move wooden blocks upon it strategically,
The thing looks well, the blocks behave as they should.
The science of war is moving live men like blocks.
And getting the blocks into place at a fixed moment.
But it takes time to mold your men into blocks.
And flat maps turn into country where creeks and gullies
Hamper your wooden squares. They stick in the brush,
They are tired and rest, they straggle after ripe blackberries,
And you cannot lift them up in your hand and move them.

To say that change is not possible, however, is false. We simply do not know enough about how to create it and control it on a mass scale.

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